

CLAIMS

1. A positive photosensitive resin composition comprising:

5     (A) a positive photosensitive resin,  
       (B) a photoacid generator and  
       (C) a photosensitizer which is a benzopyran condensed ring compound capable of increasing photosensitivity to visible light with a wavelength of 480 nm or more.

10

2. A composition according to claim 1, wherein the positive photosensitive resin (A) is a resin having a functional group or groups which are soluble in developers and are blocked with an acid-unstable group or groups.

15

3. A composition according to claim 2, wherein the functional group or groups are a hydroxyl group or groups.

20

4. A composition according to claim 1, wherein the positive photosensitive resin (A) is a carboxyl- and/or hydroxyphenyl-containing resin (a) in combination with an ether linkage-containing olefinic unsaturated compound (b).

25

06997628.020802

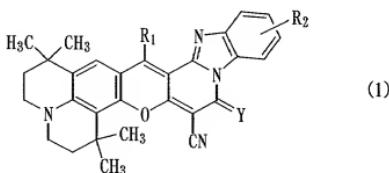
5. A composition according to claim 4, wherein  
the proportion of the unsaturated compound (b) is about 5  
to 150 parts by weight per 100 parts by weight of the  
resin (a).

5

6. A composition according to claim 1, wherein  
the proportion of the photoacid generator (B) is about 0.1  
to 40 parts by weight per 100 parts by weight of the resin  
(A).

10

7. A composition according to claim 1, wherein  
the photosensitizer (C) is a benzopyran condensed ring  
compound represented by Formula (1)



15

wherein R<sub>1</sub> is hydrogen, halogen, cyano, trifluoromethyl,  
carboxyl or carboxylic acid ester, R<sub>2</sub> is hydrogen, alkyl,  
alkoxy, cyano, trifluoromethyl, sulfoxy or halogen, and Y  
20 is NH or O.

8. A composition according to claim 1, wherein the proportion of the photosensitizer (C) is about 0.1 to 10 parts by weight per 100 parts by weight of the total amount of the resin (A) and photoacid generator (B).

5

9. A composition according to claim 1 which further comprises, as a photoacid proliferating agent (D), an organic acid ester and/or a crosslinked carbocyclic compound containing a crosslinked carbocyclic skeleton 10 which has a hydroxyl group or groups bonded to any of the crosslinked carbocyclic rings and, at a carbon atom or atoms adjacent to the hydroxyl-bearing carbon atom or atoms, a sulfonate group represented by Formula (2)

$$-\text{OSO}_2-\text{R}_5 \quad (2)$$

15 wherein  $\text{R}_5$  is acyl, aliphatic hydrocarbon, polycyclic aromatic hydrocarbon or a heterocyclic group.

10. A composition according to claim 1, which is an organic solvent-based resin composition.

20

11. A composition according to claim 1, which is an aqueous resin composition.

25

12. A positive photosensitive dry film prepared by applying a positive photosensitive resin composition

09572978 022002

according to claim 1 to a surface of support film,  
followed by drying, to thereby form a positive  
photosensitive resin layer.

5           13. A method of forming a pattern comprising the  
steps of:

(1) applying a positive photosensitive resin composition  
according to claim 1 to a substrate, followed by drying,  
to form a positive photosensitive resin coating,  
10       (2) irradiating the resin coating with visible light  
directly or through a mask so as to obtain a desired  
pattern, and  
15       (3) removing the irradiated part of the positive  
photosensitive resin coating by development to form a  
resist pattern coating.

14. A method of forming a pattern comprising the  
steps of:

(1') attaching a positive photosensitive dry film  
20       according to claim 12 to a substrate so that the  
photosensitive resin layer of the dry film is in contact  
with the substrate to form a positive photosensitive resin  
coating, and optionally peeling off the support film of  
the dry film,  
25       (2) irradiating the resin coating with visible light

09972278-200802

directly or through a mask so as to obtain a desired pattern, and

(3') peeling off the support film of the dry film when the support film has not been peeled off, and removing the  
5 irradiated part of the positive photosensitive resin coating by development to form a resist pattern coating.